

# CLAIMS

1. A fluorine-containing allyl ether polymer having a number average molecular weight of 1,000 to 1,000,000 and consisting of chains of at least one repeating unit of the formula:



wherein A is an organic group having 1 to 100 carbon atoms.

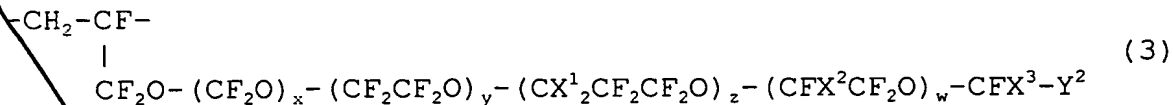
2. The fluorine-containing allyl ether polymer according to claim 1, wherein at least one of the repeating units is a repeating unit of the formula:



wherein A<sup>1</sup> is a divalent organic group having 1 to 60 carbon atoms, and Y<sup>1</sup> is -CH<sub>2</sub>OH, -COOH, -COOR<sup>1</sup> in which R<sup>1</sup> is a hydrocarbon group having 1 to 20 carbon atoms, -CON<sup>R<sup>2</sup></sup><sub>R<sup>3</sup></sub> in which R<sup>2</sup> and R<sup>3</sup> are the same or different and a hydrogen atom or a hydrocarbon group having 1 to 20 carbon atoms, -O-CF=CF<sub>2</sub>, or -OCO-CZ<sup>3</sup>=CZ<sup>1</sup>Z<sup>2</sup> in which Z<sup>1</sup> and Z<sup>2</sup> are the same or different and a hydrogen atom or a fluorine atom, and Z<sup>3</sup> is a hydrogen atom, a fluorine atom, a chlorine atom or a trifluoromethyl group.

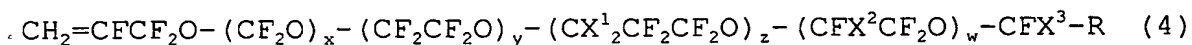
3. The fluorine-containing allyl ether polymer according to claim 2, wherein A<sup>1</sup> in the formula (2) is a fluoroalkylene group having 1 to 60 carbon atoms or a fluoroalkylene group having an ether bond and 1 to 60 carbon atoms.

4. The fluorine-containing allyl ether polymer according to claim 1, wherein at least one of the repeating units is a repeating unit of the formula:



wherein  $X^1$  is a hydrogen atom, a fluorine atom or a chlorine atom,  
 5  $X^2$  is a hydrogen atom, a chlorine atom, a methyl group or a  
 trifluoromethyl group,  $X^3$  is a hydrogen atom, a fluorine atom,  
 a chlorine atom or a trifluoromethyl group,  $x$ ,  $y$ ,  $z$  and  $w$  are  
 the same or different and a number of 0 to 20 provided that the  
 sum of  $x$ ,  $y$ ,  $z$  and  $w$  is from 1 to 20, and  $Y^2$  is  $-\text{COOH}$ ,  $-\text{COOR}^4$  in  
 10 which  $R^4$  is a hydrocarbon group having 1 to 20 carbon atoms,  $-\text{CH}_2\text{OH}$ ,  
 $-\text{CON} \begin{smallmatrix} R^5 \\ < \\ R^6 \end{smallmatrix}$  in which  $R^5$  and  $R^6$  are the same or different and a hydrogen  
 atom or a hydrocarbon group having 1 to 20 carbon atoms,  $-\text{O}-$   
 15  $\text{CF}=\text{CF}_2$ , or  $-\text{OCO}-\text{CZ}^6=\text{CZ}^4\text{Z}^5$  in which  $Z^4$  and  $Z^5$  are the same or  
 different and a hydrogen atom or a fluorine atom, and  $Z^6$  is a  
 hydrogen atom, a fluorine atom, a chlorine atom or a  
 trifluoromethyl group.

5. A fluorine-containing allyl ether polymer represented  
 20 by the formula:



wherein  $X^1$  is a hydrogen atom, a fluorine atom or a chlorine atom,  
 $X^2$  is a hydrogen atom, a chlorine atom, a methyl group or a  
 trifluoromethyl group,  $X^3$  is a hydrogen atom, a fluorine atom,  
 25 a chlorine atom or a trifluoromethyl group,  $x$ ,  $y$ ,  $z$  and  $w$  are  
 the same or different and a number of 0 to 20 provided that the  
 sum of  $x$ ,  $y$ ,  $z$  and  $w$  is from 1 to 20, and  $R$  is  $-\text{COOH}$ ,  $-\text{COOR}^1$  in  
 which  $R^1$  is a hydrocarbon group having 1 to 20 carbon atoms,  $-\text{CH}_2\text{OH}$ ,  
 $-\text{CONH}_2$ ,  $-\text{CF}=\text{CF}_2$ , a hydrocarbon group having 1 to 20 carbon atoms  
 30 or a perfluoroalkyl group having 1 to 20 carbon atoms.

6. The fluorine-containing allyl ether polymer according

to claim 5, which has a number average molecular weight of 1,000 to 1,000,000.